

FEB 19 2004

**OFFICIAL**

Customer No.: 31561

Docket No. 9745-US-PA

Application No.: 10/065,382

Patent

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Applicant : Wang et al.  
 Application No. : 10/065,382  
 Filed : Oct. 11, 2002  
 For : ORGANIC ELECTROLUMINESCENT DEVICE  
 Art Unit : 1774  
 Examiner : GARRETT, DAWN L

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TRANSMITTAL LETTER  
002-1-703-872-9306

(Via fax: 8 pages, followed by confirmation copy via courier)

Assistant Commissioner for Patents  
Arlington, Virginia 22202

Dear Sirs,

In response to the Office Action dated November 20, 2003, please find the relevant paper in response to paper No. 2. Following the fax transmission, a hard copy via courier will also be forwarded to the Office.

Enclosed documents via courier will include:

- Amendment and Response to Office Action in (6) pages
- Fax confirmation report
- Prepaid return postcard
- Extension fee

I believe that no fee is incurred. However, the Commissioner is authorized to charge any fees required in connection with the filing of this paper to account No. 50-2620 (Order No.: 9745-US-PA)

Thank you for your assistance in the subject matter. If you have any questions, please feel free to contact me.

**Patent**

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Application No.: 10/065,382

Respectfully Submitted,  
JIANQ CHYUN Intellectual Property Office

Date: Feb. 19, 2004

By: Belinda Lee  
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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In Re Application of:	)	
WANG et al.	)	Examiner : Garrett Dawn L
Serial No. : 10/065,382	)	Art Unit : 1774
Filed : 10/11/2002	)	Docket No.: 9745-US-PA
For : ORGANIC ELECTRO-	)	
LUMINESCENT DEVICE	)	
	)	

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No fee is believed to be due in connection with this amendment and response to Office Action. If, however, any fee is believed to be due, the Commissioner is authorized to charge any fees required in connection with the filing of this paper to account No. 50-2620 (order No. 9745-US-PA).

**AMENDMENT AND RESPONSE TO OFFICE ACTION**

U.S. Patent and Trademark Office  
 Commissioner for Patents  
 2011 South Clark Place  
 Customer Window, Mail Stop **Non-Fee Amendment**  
 Crystal Plaza Two, Lobby, Room 1B03  
 Arlington, Virginia 22202

Dear Sir:

The Office Action mailed Nov. 20, 2003 has been carefully considered. In response thereto, please consider the following remarks.

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### **REMARKS**

#### **Present Status of the Application**

The Office Action rejected all presently pending claims 1-16. Specifically, the Office Action rejected claims 1-16 under 35 U.S.C. 112 first paragraph. The Office Action rejected claims 1, 2, 5-10 and 13-16 under 35 U.S.C. 103(a) as being unpatentable over Aziz et al. (US Patent 6,392,250). The Office Action also rejected claims 4 and 12 under 35 U.S.C. 103(a) as being unpatentable over Aziz et al. (US Patent 6,392,250) in view of Raychaudhuri et al. (US Patent 6,551,725). Claims 1-16 remain pending in the present application, and reconsideration of those claims is respectfully requested.

#### **Discussion of Office Action Rejections**

The Office Action rejected claims 1-16 under 35 U.S.C. 112, first paragraph. Applicants respectfully traverse the rejections for at least the reasons set forth below.

The present invention is characterized in forming an intermediate layer with a relatively high mobility between the hole injecting layer and the hole transport layer, such that the luminescent efficiency of the organic electroluminescent device is increased together with the increase of the hole injection rate without increasing driving voltage (see paragraph [0019]). Therefore, the scope of protection sought by claims 1 and 9 of the present invention commensurates with the disclosure. As stated in Chapter 2164.8 of the MPEP, "[a]s concerns the breadth of a claim relevant to enablement, the only concern should be whether the scope of

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enablement provided to one skilled in the art by the disclosure is commensurate with the scope of protection sought by the claims. *In re Moore*, 439 F.2d 1232, 1236, 169 USPQ 236, 239 (CCPA 1971).". The triphenylamine derivatives are some examples for the intermediate layer provided by the present invention. It is respectfully submitted that the applicants are not obligated to provide selection of other specific compounds because so long as an intermediate layer has a mobility higher than that of the hole transport layer, it can be served as an intermediate layer of the present invention. Accordingly, one skilled in the art should be able to practice the invention base on the difference of the mobility between the intermediate layer and the hole transport layer (or the hole injection layer). In other words, one skilled in the art can form the intermediate layer by using any material, which has mobility higher than that of the hole transport layer or the hole injection layer.

For at least these reasons, Applicants respectfully assert that the specification does enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

The Office Action rejected claims 1, 2, 5-10 and 13-16 under 35 U.S.C. 103(a) as being unpatentable over Aziz et al. (US Patent 6,392,250). Applicants respectfully traverse the rejections for at least the reasons set forth below.

Independent claims 1 and 9 recite feature as follows:

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1. An organic electroluminescent device, comprising:  
a cathode;  
an anode under the cathode;  
an emitting layer, between the cathode and the anode;  
a hole transport layer, between the emitting layer and the anode;  
an electron transport layer, between the emitting layer and the cathode;  
a hole injecting layer, between the hole transport layer and the anode; and  
an intermediate layer, between the hole injecting layer and the hole  
transport layer, wherein the intermediate layer has a mobility higher than that  
of the hole transport layer.  
(emphasis added)

9. An organic electroluminescent device, comprising:  
a cathode;  
an anode, under the cathode;  
an emitting layer, between the cathode and the anode;  
an electron transport layer, between the emitting layer and the cathode;  
a hole transport layer, between the emitting layer and the anode;  
a hole injecting layer, between the hole transport layer and the anode; and  
an intermediate layer, between the hole injecting layer and the hole  
transport layer, wherein the intermediate layer having a mobility higher than  
that of the hole injecting layer.  
(emphasis added)

Dependent claims 2-3, 5-8, 10-11 and 13-16 also recite the similar features.

In re Aziz et al. (US Patent 6,392,250), Aziz et al. disclosed that "In embodiments such as the organic light emitting device 136 comprising a multi-layered hole transport layer 136, the individual layer have thickness of at least about 1 nm"(See Col.9 lines 34-36). However, for one skilled artisan, Applicants assert that Aziz et al. fail to teach or suggest how to arrange the multi-layered hole transport layer 136 in a predetermined order. Specifically, Aziz et al. fail to teach

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or suggest that the order of the multi-layered hole transport layer 136 can be determined by mobility of the individual layers. Also, the description disclosed by Aziz et al. contains nothing about "mobility of the individual layers" at all, therefore, Applicants consider that there is no motivation for one skilled in the art to determine the order of the individual layer by mobility thereof.

The Office Action also rejected claims 4 and 12 under 35 U.S.C. 103(a) as being unpatentable over Aziz et al. (US Patent 6,392,250) in view of Raychaudhuri et al. (US Patent 6,551,725). Applicants respectfully traverse the rejections for at least the reasons set forth below.

Dependent claims 4 and 12 recite the similar features as claim 1 and 9, respectively. Accordingly, Applicants assert that the combination of Aziz et al. with Raychaudhuri et al. is not identical with claim 4 and claim 12 substantially. Therefore, claim 4 and claim 12 should be patentable over Aziz et al. in view of Raychaudhuri et al.

For at least the foregoing reasons, Applicant respectfully submits that independent claims 1 and 9 patently define over the prior art references, and should be allowed. For at least the same reasons, dependent claims 7, 8, 13 and 14 patently define over the prior art as well.

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**CONCLUSION**

For at least the foregoing reasons, it is believed that the pending claims 1-16 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Date :

Feb 18, 2004

Respectfully submitted,

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